

**REMARKS**

Applicants respectfully request reconsideration of the application, as amended, in view of the following remarks.

The present invention as set forth in **amended Claim 1** relates to a bisphenol compound composition having excellent thermal stability, comprising:

a bisphenol compound; and

a pyridine compound in an amount of from 1 ppt to 10 ppm calculated as pyridine;

wherein said bisphenol compound composition is crystallized.

**Amended Claim 5** relates to a method for improving thermal stability of a bisphenol compound, comprising:

adding from 1 ppt to 10 ppm of a pyridine compound to a purified bisphenol compound.

**New Claim 29** relates to a bisphenol compound composition having excellent thermal stability, comprising:

a bisphenol compound; and

a pyridine compound in an amount of from 1 ppt to 10 ppm calculated as pyridine;

wherein said bisphenol compound is purified by crystallization.

In contrast, Pannell fails to disclose or suggest a bisphenol compound or a method for improving thermal stability of a bisphenol compound, as claimed.

Pannell discloses polycarbonates **made from bisphenol A** (Pannell, col. 2, lines 14-16). Thus, bisphenol A is merely a starting material for the polycarbonate resin and not identical with the resin.

“Bisphenol compound” is defined at page 1, 1<sup>st</sup> full paragraph as:

“a bisphenol compound is produced by allowing a phenol compound to react with a ketone compound in the presence of an acid catalyst. Carried out in most large scale is the production of bisphenol A from phenol and acetone, but corresponding bisphenol compounds can also be produced using phenols having a

substituent group on the ring, such as cresol and the like and ketone compounds other than acetone, such as methyl ethyl ketone and the like, as the raw materials.”

In addition, the specification of the present invention states at page 1, last paragraph to page 2, first paragraph:

“One of the important use of polycarbonate resins produced using bisphenol compounds as the raw material is for optical use, and products free from coloring and with excellent hue are particularly required for this use. Since bisphenol compounds are melted during the production of polycarbonate resins, in order to comply with these requirements, the bisphenol compounds as raw materials must be excellent in thermal stability so that discoloration does not occur when exposed to high temperature.”

Thus, a bisphenol compound is a starting material for producing a polycarbonate resin and thus different from the polycarbonate resin disclosed in Pannell. The composition of Pannell has a polycarbonate resin and a pyridine compound (Examples at cols. 3 and 4). This composition is not a combination of a bisphenol compound and a pyridine compound as claimed.

Further, there is no disclosure or suggestion in Pannell of a method for improving thermal stability of a bisphenol compound, comprising:

adding from 1 ppt to 10 ppm of a pyridine compound to a purified bisphenol compound.

In fact, Pannell discloses the **removal of the pyridine compound** (Examples at cols. 3 and 4) and not its addition and thus teaches away from the present invention as claimed in Claim 5.

Therefore, the rejection of Claims 1, 3 and 5 under 35 U.S.C. § 102(b) as anticipated by US 4,177,343 and the rejection of Claims 1, 3, 4 and 5 under 35 U.S.C. § 103(a) as being unpatentable over US 4,177,343 are believed to be unsustainable as the present invention is neither anticipated nor obvious and withdrawal of these rejections is respectfully requested.

The rejections of Claims 1-5 under 35 U.S.C. § 102(b) as anticipated by, or, in the alternative, under 35 U.S.C. § 103(a) as obvious over Maki et al are respectfully traversed.

Maki et al disclose at column 4, lines 4-7, that **no** 3-pyridinemethanethiol was detected in the reaction solution of Example 1, while the present Claims require 1ppt to 10ppm of a pyridine compound. The Examiner argues that the reference may have inherently 1ppt to 10ppm of pyridine compound. However, such position is not sustainable in view of the fact that the specification discusses a method as described in Maki et al. The specification describes at page 5, first full paragraph:

“In this connection, a method is known in which a sulfonic acid type cation exchange resin prepared by modifying a portion of its sulfonic acid groups with a mercaptoalkylpyridine is used as a catalyst for forming a bisphenol compound by condensing a phenol compound with a ketone compound, but concentration of the pyridine compound in the bisphenol compound obtained by this method is **generally far lower than 1 ppt**. This is because the amount of mercaptoalkylpyridine released from the catalyst during the reaction is generally extremely small per unit amount of the formed bisphenol compound, and since crystallization is carried out during a period until the bisphenol compound is obtained as a product from the reaction solution containing the bisphenol compound, **concentration of the pyridine compound in the product is further reduced.**”

Thus, in Maki et al, the amount of pyridine compound is much lower than in the present invention. Further, there is no disclosure or suggestion to crystallize the bisphenol compound in Maki et al. However, in the present invention, the bisphenol compound is crystallized.

Therefore, the rejection of Claims 1-5 under 35 U.S.C. § 102(b) as anticipated by, or, in the alternative, under 35 U.S.C. § 103(a) as obvious over Maki et al are believed to be unsustainable as the present invention is neither anticipated nor obvious and withdrawal of these rejections is respectfully requested.

The rejection of Claims 1-5 under 35 U.S.C. § 103(a) as being unpatentable over JP 57120541 is respectfully traversed.

Applicants submit herewith a full translation of JP 57120541.

JP 57120541, uses a **large amount pyridine compound** in the Examples which is outside the claimed scope. Notably, Example 1 uses 0.938 g of 2-(4-pyridyl)ethanethiol and Example 2 uses 4.69 g of 2-(4-pyridyl)ethanethiol (see pages 4 and 5 of the translation). Even though this reference generally discloses to purify bisphenols by distillation or crystallization, (page 4 of translation, first full paragraph), there is no disclosure or suggestion to obtain a bisphenol having only 1ppt to 10ppm of pyridine compound as claimed. Just because a purification procedure is performed it does not mean that extremely low levels of pyridine compound can simply be achieved.

Therefore, the rejection of Claims 1-5 under 35 U.S.C. § 103(a) as being unpatentable over JP 57120541 is believed to be unsustainable as the present invention is neither anticipated nor obvious and withdrawal of this rejection is respectfully requested.

The rejection of Claims 1-5 under 35 U.S.C. § 112, 2<sup>nd</sup> paragraph, is respectfully traversed.

The phrases “bisphenol compound” and “pyridine compound,” are sufficiently disclosed in the specification at page 1, lines 10-12, and page 3, first paragraph, respectively.

Notably, a “bisphenol compound” is defined at page 1, 1<sup>st</sup> full paragraph as:

“a bisphenol compound is produced by allowing a phenol compound to react with a ketone compound in the presence of an acid catalyst. Carried out in most large scale is the production of bisphenol A from phenol and acetone, but corresponding bisphenol compounds can also be produced using phenols having a substituent group on the ring, such as cresol and the like and ketone compounds other than acetone, such as methyl ethyl ketone and the like, as the raw materials.”

A “pyridine compound” is defined at page 3, 1<sup>st</sup> full paragraph as:

“As the pyridine compound, any of pyridine or a substituted pyridine having a substituent group on a carbon atom of the ring can be used. As the substituted pyridine, it is desirable to use alkyl or alkenylpyridines such as 4-vinylpyridine, 2-vinylpyridine, 4-methylpyridine, 2-methylpyridine, 4-ethylpyridine, 2-ethylpyridine, 2,4-dimethylpyridine and the like; and mercaptoalkylpyridines such as 2-mercaptomethylpyridine, 3-

mercaptomethylpyridine, 4-mercaptomethylpyridine, 2-(2-mercaptoethyl)pyridine, 3-(2-mercaptoethyl)pyridine, 4-(2-mercaptoethyl)pyridine, 2-(3-mercaptopropyl)pyridine, 3-(3-mercaptopropyl)pyridine, 4-(3-mercaptopropyl)pyridine, 2-(4-mercaptobutyl)pyridine, 3-(4-mercaptobutyl)pyridine, 4-(4-mercaptobutyl)pyridine and the like. In addition, 2:1 condensation products of the mercapto group of these mercaptoalkylpyridines with a ketone compound can also be used."

Accordingly, this rejection is believed to be unsustainable and should be withdrawn.

This application presents allowable subject matter, and the Examiner is kindly requested to pass it to issue. Should the Examiner have any questions regarding the claims or otherwise wish to discuss this case, he is kindly invited to contact Applicants' below-signed representative, who would be happy to provide any assistance deemed necessary in speeding this application to allowance.

Respectfully submitted,

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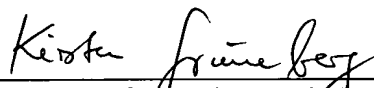
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### **INTERVIEW SUMMARY**

Applicants wish to thank Examiner Shippen for the helpful and courteous discussion with Applicants' Representative on November 3, 2004. During this discussion it was noted that "bisphenol compound" and "pyridine compound," are defined in the specification at page 1, lines 10-12, and at page 3, first paragraph, respectively.

Further, Pannell does not anticipate the claimed invention because the polycarbonate polymer is different from the claimed bisphenol compound.

JP 57120541, uses a large amount pyridine compound in the Examples which is outside the claimed scope.

Maki et al disclose at column 4, lines 4-7, that **no** 3-pyridinemethanethiol was detected in the reaction solution of Example 1, while the present Claims require 1ppt to 10ppm of a pyridine compound.